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ferably three transmitting members of the Wireless Institute of Australia and three licensed Amateurs to represent the non-Institute Amateurs. Where the full compliment cannot be obtained, the numbers can be jugged to suit the Chairman of each Committee, the Chairman being an Officer of the Department. In addition to these members, the Department can at its discretion appoint observers in country areas.

The Committees meet regularly and discuss the conduct of Amateur affairs and generally control the activities of those who have that human tendency to stray off the path of good operating and commit breaches of the Regulations. In between the meetings of the Committees the members and observers spend many hours monitoring the bands, warning and advising any Amateur who errs rather than report him to the Chairman. In this way petty "law breakers" are given the opportunity to correct their equipment faults, operating irregularities, or what-have-you without meeting with Departmental pro forma's which result in a blot on the copy-book of the licensee.

The Amateur Advisory Committee system has been operating since the war, but it has been gradually gaining a reputation for being a sort of "secret police organisation" because its members have been shrouded in mystery and never known to the Amateur fraternity. Elsewhere in this issue of "Amateur Radio" you will find a list of the names of the Amateurs who comprise the mem-

(Continued on Page 10)

EDITORIAL**AMATEUR ADVISORY COMMITTEES**

In the same way that regulations for driving motor vehicles, flying aircraft, filing income tax returns and the like have of necessity to be "policed," the regulations under which Amateurs operate have also to be supervised to insure that the licensees abide by the terms of their license. It seems inherent in human nature in every country in all walks of life wherever people congregate as a community to carry on the daily task of living, that some form of superintendence of the community laws and regulations is necessary.

Before World War II, a committee of Departmental Officers and Amateurs in each Capital City, known as a **Vigilance Committee**, was set up to maintain some form of discipline in the operating of Amateur transmitting stations. Up to a point these Committees were satisfactory, but left much to be desired insofar as the Institute was concerned because they savoured somewhat of a little "gestapo" or, if not that, something bordering on a system which left itself open to severe criticism although doubtless well-being was generally intended towards those who fell within its clutches.

After the cessation of hostilities when Amateurs were again licensed, the Institute gained representation on a similar committee set up in each State of the Commonwealth to become known as the **Amateur Advisory Committee**—the name currently given to it today.

The Amateur Advisory Committee in each State is composed of Officers of the Wireless Branches of the Postmaster-General's Department, pre-

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NOTES ON V.H.F. CONVERTER DESIGN*

Some Practical Hints for Improving the Performance of Crystal Controlled Converters

THE basic reason for the use of a converter is to extend the frequency range of a communications receiver to bands where the owner of the receiver wishes to operate. Various forms of v.h.f. converters have been used with Amateur receivers for many years, but only recently have they begun to achieve a high state of perfection.

A major drawback of v.h.f. converters in general has been instability in the local oscillator, resulting from mechanical vibration or long-term thermal effects. In order to circumvent this difficulty, the use of crystal controlled injection sources has come into vogue. The higher the frequency the more difficult it is to design a variable frequency oscillator, so though crystal controlled converters for all Amateur bands have been described, their greatest use has been found on 50 Mc. and higher bands.

The use of crystal control in the converter, though it makes possible a high order of stability, introduces other complications. These revolve around the fact that, with a single injection frequency, the intermediate frequency must be varied to effect a tuning range. The r.f. portion of the converter must thus be broadbanded in some way, so that its gain will be constant across the band for which it is designed, yet it must be made to reject signals on all frequencies outside the desired range insofar as possible.

Some crystal controlled converters that have been described make use of rather inefficient broadbanding methods.

An example is the use of single-tuned coupling circuits damped with shunt resistors to broaden their frequency response, as shown at the top of Fig. 1. This is simple circuitwise, but it produces a passband that is far from the ideal. It achieves broad response at the expense of gain, and the passband is such that interference from strong signals outside of the desired frequency range is a problem. On the other hand, we have found that use of several double-tuned overcoupled circuits as shown in the lower portion of Fig. 1, results in an almost ideal flat-topped passband characteristic. High Q coils of proper form factor, oriented for minimum capacitive coupling between stages, make possible this desirable response without an excessive number of circuits. It is obvious that this technique is going to be effective in reducing the amplitude of adjacent frequency signals from strong local stations and interference from the unwanted harmonics of the crystal oscillator or doubler stages in the converter. The tendency to cross-modulation from stations located outside the passband is reduced, and higher gain is obtained at the desired frequencies.

Probably even more annoying than the cross modulation trouble that is found in many crystal controlled converter designs is their spurious response to signals outside the desired frequency range. It is quite common, in tuning

• We have had numerous requests to re-print the following article from "QST" on V.H.F. Converter Design, and as this type of v.h.f. reception is used by most Ham's here it is.

Crystal Controlled Converters are becoming more popular among v.h.f. men every day, but unless they are carefully designed their considerable response to signals outside the intended frequency range may make them something less than an unalloyed blessing. Here, the authors describe simple means for reducing spurious responses in v.h.f. converters, while at the same time maintaining uniform high sensitivity across the desired tuning range.

the four megacycle range covered by the 2 metre band, for example, to find many interfering signals in addition to the desired Amateur stations. These may be the sound or video carriers of local television stations, taxi cab or other mobile service stations, operating in the frequency range that serves as the intermediate frequency, or unmodulated signals resulting from harmonics of the receiver oscillator. All except those in the last category can be minimised or eliminated completely by employing suitable converter design techniques.

One of the purposes of this article is to describe means of overcoming these weaknesses of crystal controlled converters for 144 Mc. while at the same time achieving a high order of sensitivity and stability. The 2 metre band is used as an example for several reasons, though the same principles may be applied to other frequencies in the v.h.f. range. Reception at 144 Mc. requires multiplication of the crystal oscillator frequency. A converter for this band is quite susceptible to the spurious response troubles mentioned above because of its location in the spectrum between two high powered broadcasting services (fm. and tv.) and close to many aircraft and mobile frequencies. In addition, it requires the use of low-noise r.f. amplifier techniques as the frequency is high enough to make receiver noise one of the major limiting factors in weak signal reception.

R.F. AMPLIFIER CIRCUITRY

It is well known that the first r.f. amplifier in a good design controls the sensitivity, or more accurately, the noise figure of the entire system. In the specific design in question it was decided to use one of the new low-noise dual triodes, such as the 6BQ7A, the 6BK7 or 6BZ7. The first r.f. amplifier circuit is the so-called cascode or driven grounded-grid arrangement shown in Fig. 2. This provides high gain, low noise figure, excellent stability, and ease of adjustment.

Many variations of this circuit have been devised, and nearly all show complicated neutralising methods for achieving the lowest possible noise figure. In the case of a circuit to be used only over a narrow band of frequencies (it should be noted that the 2 metre band is actually narrower than a single television channel), fuzzy neutralising arrangements can be dispensed with, and a single small coil used to advantage. This inductor is connected between the plate of the first triode section and the cathode of the second, and is designed to be resonant with the input capacitance of the grounded-grid section. This dual triode circuit has a noise figure under 4 db above thermal. When it is used with a suitable pentode r.f. amplifier following, the over-all noise figure can be just slightly in excess of 4 db, which is quite good at these frequencies.

Note that a second r.f. amplifier using a pentode (6AK5 or 6CB6) is suggested. If the mixer follows the first r.f. amplifier directly the noise figure will not be as good, and the operating conditions for the mixer become more critical. The intermediate r.f. amplifier also permits the use of more tuned circuits at the signal frequency and hence improves the rejection of adjacent signals and those on the intermediate frequency. In this respect, the additional pentode r.f. stage is superior to the use of an if-amplifier stage in the converter as a means of building up the gain. The latter tends to increase difficulties with signal pick-up at the intermediate frequency, whereas the second pentode stage is effective in reducing it. If control of the over-all converter gain is desirable, it can be accomplished by means of a cathode-bias gain control in the pentode stage in the same manner as is commonly used in i.f. amplifier stages.

Double-tuned circuits are used between the triode and pentode amplifiers, and between the pentode amplifier and the mixer. This is a very important feature, making possible the highly desirable over-all response shown in the lower portion of Fig. 1. The coupling circuits can best be aligned by the use of a sweep-frequency generator, but this is not necessary. Entirely satisfactory performance can be obtained by judicious use of a grid-dip meter and a final touch-up using on-the-air signals. The gain of the unit is adequate to give very good performance, even with some mistuning.

PENTODE OR TRIODE MIXER?

Triode mixers are commonly used in v.h.f. converter service in preference to pentodes because of their generally lower noise figure. This is an important consideration only when no r.f. stage or an ineffective stage is used. The performance of the triode-pentode combination already described is such that the mixer following it has substantially no effect on the noise figure of the system, so the following desirable features of a pentode mixer can be made use of:

* Reprinted from "QST," February, 1953.

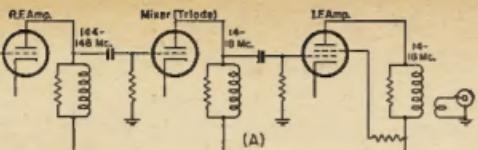
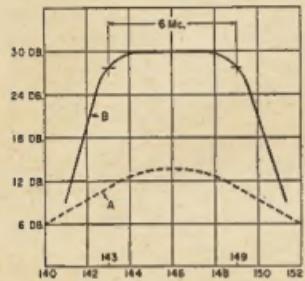
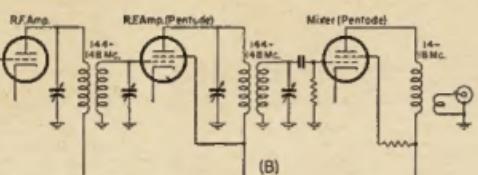


Fig. 1—Basic converter circuit showing methods of broadbanding. Circuit A has resistive loading, resulting in the broad but low-gain response shown by the dotted line in the graph below. An i.f. amplifier stage is needed for satisfactory overall gain.

In B, double-tuned circuits between the r.f. and mixer stages to give the broadband characteristics of Curve B. The first stage, a triode, is followed by a pentode to build up gain. The mixer can be either a triode or a triode. Gain is equal to the above, without an i.f. stage, and rejection of unwanted signals is greatly improved.



Properly designed, the pentode mixer is less susceptible to oscillation trouble than a triode. It affords better isolation between r.f. and i.f., and consequently contributes to the ability of the converter to reject signals on other than the desired frequency range. The better pentodes have higher conversion gain, making an i.f. amplifier following the mixer unnecessary. Pentodes generally require less injection voltage than triodes, making the work of the oscillator-multiplier chain easier.

The design of a mixer to follow an effective r.f. amplifier system is not critical. Generally speaking, the principal consideration is to set up the operating conditions of the pentode so that it draws the lowest plate current consistent with satisfactory output.

OSCILLATOR-MULTIPLIER CONSIDERATION

The oscillator portion of the converter uses a crystal operating on its third overtone, permitting selection of the crystal from readily available frequencies in the 7 to 8 Mc. range. The actual frequency is dependent on the intermediate frequency selected. Choice of the i.f. is a matter for later discussion. The final multiplied output should be 144 to 148 Mc. minus the desired tuning range of the low-frequency receiver. An example is an injection frequency of 130 Mc., allowing the receiver to be tuned from 14 to 18 Mc. to cover the 144 Mc. band. This is achieved by a 7,222 Kc. crystal operating on its third overtone, which is then multiplied by a factor of six.

Many other possibilities exist, though this one provides for the use of a low-cost crystal and a simple multiplying chain. It is desirable to keep the frequency multiplication to a minimum, as the more multiplication there is involved, the more complex becomes the signal fed into the mixer tube, and consequently the greater the danger of mixing the incoming signals with frequencies other than the desired one, resulting in "birdies" across the band.

A typical case develops if high-order harmonics, other than the desired 130 Mc., get into the mixer tube together with the sound or picture carriers of t.v. Channel 7, which can be very disconcerting if a transmitter is operating on that channel locally. There are many other possibilities, of course, but suffice to say that it is highly desirable to minimize the presence of other than the desired frequencies at the mixer grid.

Occasionally, it will be found that local interference problems can be solved by suitable choice of multiplier frequencies following the crystal oscillator, selecting these frequencies so that none is higher or lower than a local service by the amount of the intermediate frequency. Normally the stage following the overtone oscillator multiplies the frequency by two, and another stage runs as a tripler. This sequence is desirable in the presence of a strong t.v. signal on Channel 7, but there may be other cases where the order of frequency multiplication can be reversed to advantage.

In addition to choice of frequency multiplication according to local conditions, it is important that adequate filtering of unwanted harmonics of the crystal is provided in the plate circuit of the last frequency multiplier. This

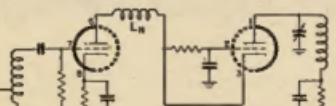


Fig. 2—Modification of the cascode circuit suitable for a 1 megacycle i.f. amplifier section. The coil L_m is centered at the middle of the board with the input capacitance of the second triode section. Its adjustment is not critical. Suitable tubes are the 6BQ7A, 6RK7 or 6BZ7.

can be done with undercoupled double-tuned circuits, but in this instance it has been found adequate to use a high Q plate circuit loosely coupled to the mixer grid by means of an inductive link.

MECHANICAL LAYOUT

Several desirable objectives can be attained by proper layout of components for a crystal controlled converter. There are two general approaches to the problem of adequate isolation and reduction of feed-back. One is to build compactly and resort to rather complicated shielding and filtering. Another is to build somewhat larger, in order to provide space for a layout that will achieve the same ends.

Stability, that is freedom from feedback, is accomplished in the r.f. portion of the converter by careful positioning of the r.f. inductors, and phasing of the windings for minimum unwanted coupling between stages. Capacitive coupling between r.f. stages is held to a minimum by designing the r.f. inductors so that their hot connections (to plate and grid) occur at opposite ends of the coil structure. Components in the oscillator-multiplier chain are so placed as to prevent strong local fields therein from adversely affecting the performance of the r.f. portion.

Complete shielding from strong external fields is important, as is the prevention of signal pick-up at the intermediate frequency by any portion of the converter circuitry. This is achieved in a very simple manner by building the converter entirely on a metal plate that is then fitted to a chassis or metal-lined box to complete the metal enclosure. Connection from the converter to the communications receiver should be made with co-axial line, the outer conductor of which is connected to the case of the converter and to the receiver shielding. In the case of extremely strong local signals on the intermediate frequency, it may be necessary to add a shielding box around the receiver antenna terminals.

DESIRABLE RECEIVER CHARACTERISTICS

The communications receiver with which the converter is used plays an important part in the over-all performance of the v.h.f. receiving system. Desirable receiver attributes could be stated in general as follows: The receiver should have very good image rejection in the frequency range that is to be used as the i.f. band for the crystal controlled converter. It should be well enough shielded to prevent direct pick-up of signals in the i.f. range. The receiver oscillator and beat frequency oscillator should be stable, if maximum advantage is to be derived from the use of crystal control in the converter. The tuning range that is to serve as the intermediate frequency should have sufficient bandspread so that signals may be tuned in easily and spotted readily as the receiver is tuned across the i.f. range. Some receivers are deficient in this category, particularly those that have separate bandspread and general coverage dials.

The local oscillator of the communications receiver should be of low amplitude, be thoroughly shielded and of

low harmonic content, and preferably applied to an inner grid of a pentagrid type mixer. When this is done, the oscillator voltage is effectively isolated from the signal input grid voltage by means of the screen. It is especially important that there be no oscillator voltage appearing at the antenna input terminals of the receiver, for such voltages even at very low amplitude will cause "birdies" in the tuning range.

It is not necessary that the receiver be outstandingly sensitive; in fact, it may be desirable to have less than the usual sensitivity, as the converter has quite high gain in its own right.

If the receiver has inadequate image rejection (less than 1,000 times) at the frequency chosen for the converter output, repeat signals will appear at twice the receiver i.f. away from the main response. That is, if the communications receiver i.f. is 455 Kc, the 2 metre signals will repeat 910 Kc. away from the proper frequency. This is a characteristic of the communications receiver, and nothing can be done about it in the converter. In general, it may be said that single conversion receivers having one r.f. stage or none at all will have inadequate image rejection in the 14 to 18 Mc. region. Single conversion jobs with two tuned r.f. stages will be much better, but double conversion receivers with a higher first intermediate frequency are the best of all.

If the converter is to be used with inexpensive receivers having poor image rejection at 14 Mc., better results will be had with a lower converter i.f., such

as 7 Mc. Using 14 to 18 Mc. has a special advantage for 144 Mc. converters, however—it allows direct reading of frequency from the receiver tuning dial, 14 Mc. being 144, 15 Mc. 145, etc.

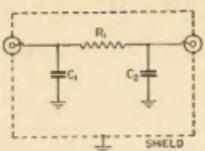


Fig. 3.—Simple low-pass filter for use in keeping receiver oscillator energy from entering the converter through its output cable. C1 and C2 are about 20 pF., R1 should be 100 to 200 ohms.

Where energy from the receiver oscillator is radiated through leads to a separate power supply, or as a result of inadequate shielding, harmonics of the oscillator frequency may cause many fast-tuning birdies in the tuning range. The rapid-tuning characteristic identifies them as harmonics, the speed of tuning being related to the order of the harmonic. One otherwise excellent receiver that is troublesome in this respect may be corrected by the use of shielding over the power supply cable and filtering of the individual leads where they come out of the receiver. A simple low-pass filter such as is shown in Fig. 3 may help in minimising this trouble in cases of inadequate oscillator shielding. This should be inserted in the line between the converter and the receiver input terminals.

PERFORMANCE

A typical 144 Mc. converter based on the design thoughts here discussed will have a noise figure of 4 to 5 db, depending on the tubes used. Rejection of spurious signals will be a minimum of 1,000 times, and will be that low only on signals around 116 Mc., a little-used frequency that should cause no particular difficulty. Response to signals in the 14 to 18 Mc. range, often troublesome in crystal controlled designs, is too low to be measured; in other words, in excess of 100,000 times.

The response in the region of the 144 Mc. band, shown in Fig. 1, is essentially flat across the band itself, dropping sharply a short distance from either band edge.

Though the 144 Mc. band is used as an example, the same principles have been applied successfully to bands from 28 to 420 Mc. By suitable attention to minimising spurious responses, the stability of crystal control and the advantages of broadband design can result in a quality of reception on these bands that is available through no other means.

ACCURATE FREQUENCY TRANSMISSIONS FROM VK3WI

The next Accurate Frequency Transmission will take place on Thursday evening, 27th Aug., 1953, on the 3.5 Mc. band. Details of the operating procedure and times of operation will be found on page 6 of the February, 1953, issue of this magazine.

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AMATEUR TELEVISION

PART TWO—DESCRIPTION OF EQUIPMENT

FLYING SPOT SCANNER

The VCR112 cathode ray tube used as a scanner provides the only source of illumination for the object being viewed. Thus the brilliance of the spot must be high, and for reasons shown below, the scanning spot must be as small as possible. This entails an e.h.t. supply of the order of 3 kilovolts. This high voltage, together with the design of the tube, gives a very low deflection sensitivity, being 0.25 mm. and 0.14 mm./volt. Thus a horizontal deflecting voltage of the order of 500 volts peak/peak is required, and somewhat less vertically.

To provide this, necessitated the use of 6V6 tubes in push-pull in each amplifier. The anode loads had to be reasonably low (23,000 ohm) to preserve the rapid flyback of the horizontal sawtooth (5,250 c.p.s.). A higher anode load would result in capacitive shunting of the sawtooth potentials, and curvature at the commencement and end of flyback.

A long tailed amplifier (cathode coupled) is used for the vertical deflection, but for horizontal deflection, a 6J5 phase splitter is used in order to obtain the maximum from the 6V6 deflection amplifiers.

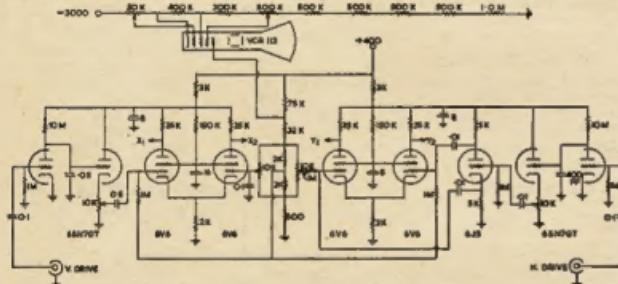


FIG. 2. FLYING SPOT SCANNER

The inputs to the discharge tubes from the sync. signal generator are short duration positive going pulses of about 25 volts peak. A 6SN7GT tube is used for each discharge tube and its cathode follower. Cathode followers are used in order to provide a low impedance point for gain control, to set the dimensions of the raster. Balanced shift controls are provided in order to avoid astigmatism. For the same reason, the mean plate potentials of the deflection amplifiers, and the final anode potential of the VCR112 were adjusted to match within 5 volts. This keeps the spot well focussed over the whole of the screen.

A circuit diagram of the flying spot scanner is shown in Fig. 2.

In order to minimise electromagnetic and electrostatic pick-up by the c.r.t., a double sheet metal magnetic screen is fitted around the tube barrel. Two 24

* C/o. Station 6WA, Wagin, Western Australia.

gauge g.i. shields were found to be more effective than a heavy pipe. They are spaced about $\frac{1}{2}$ " apart.

The whole is enclosed in an aluminium case, with the controls (shift, focus, etc.), brought out at one side. This leaves the tube face free for mounting a transparency or lens system. The power supply is external, and all power is brought in by cable. Incidentally, the three kv. e.h.t. is brought in the main cable (pushback wire, and Amphenol octal plugs) without any sign of arcover, or brush discharge.



FIG. 3. EFFECT OF SPOT SIZE

SPOT SIZE

The flying spot must be very small, as this can be the limiting factor in both horizontal and vertical resolution. For example, taking a bar pattern of

The screen of the VCR112 has a rather rough matt finish, causing some halation, and an effective enlargement of the size of the spot. No further reduction of spot size beyond that already obtained, seems to be possible, so that for this tube, 250 lines seems to be the limit of resolution.

SCREEN PERSISTENCE

After excitation of one small element of the phosphor by the electron beam has ceased, as the spot moves on, the light from this element, ideally, should cease instantly. The time taken for the phosphor glow to be reduced to 10% of its excited intensity is termed the screen persistence.

It will be seen that if the persistence is long, the effect will be that the spot has a "tail" of length proportional to the screen persistence, and the writing rate of the beam. Light will be coming from parts of the screen other than the part excited at any instant, by the beam, and signal proportional to the total illumination of this whole area will be obtained from the photocell. If the effective elongation of the spot is considerable, fine detail in the picture will be masked, and resolution lost.

The persistence of the VCR112 is fairly short, of the order of 30 usec. This is still far too long for resolution of the order of 2 usec, but fortunately considerable correction can be applied in the video amplifying stages, and will be described later.

As the light from the screen is a continuous spectrum, giving the effect of white light, I considered it possible that different colour components of the light might have differing persistence. Experiments with colour filters showed that a blue filter would decrease the effect somewhat, and a green filter would increase it.

The method used was as follows:—

The flying spot scanner raster was covered with a mask having a slot to expose a small area. Ideally, the signal received would be a square wave, as shown in Fig. 4.

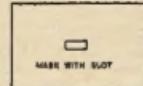


FIG. 4. IDEAL RESPONSE - SLOT

The oscilloscope was connected to trace the waveform at the output of the photocell, and was of the form shown in Fig. 5a.

Three points, marked A, B and C, show departure from the ideal.

Curves A can be accounted for by the shape of the leading edge of the spot, and probably would not exist if a square spot could be used for scanning. The curvature is so slight as not to effect the resolution. Its very existence



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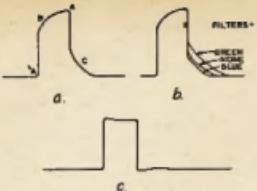


FIG. 5. EFFECT OF SCREEN PERSISTENCE

is doubtful, as the oscillograph used has a response falling from 100 Kc., and could account for it.

Curves B and **C** are due to screen persistence, the effect being an integration of the total light from spot and tail. The effect of blue and green filters is shown in Fig. 5b.

Video circuit correction for the tail, by "high peaking" will provide excellent compensation, as shown in Fig. 5c. Thus the use of a blue filter seems of little value, as it causes considerable light loss, and the improvement in the correction of persistence is small.

The effect of phosphor persistence on the reproduced picture is that a sharply defined white area is followed by an area of decreasing white "smear," and a black area by a black "smear." High peaking removes it completely.

POWER SUPPLY

This is a separate unit, and is a normal supply giving 400 volts positive for the discharge tubes and amplifiers. An e.h.t. supply of 3 kv. negative is obtained from a radio frequency e.h.t. oscillator and 2X2½ rectifier.

A commercial e.h.t. oscillator coil was used at first, but failures due to repeated arcovers forced me to make a unit, using a slotted former of loaded ebonyite. Six slots, $\frac{1}{8}$ " wide and $\frac{3}{16}$ " deep-spaced $\frac{1}{8}$ " were cut in a $1\frac{1}{4}$ " former. The end slots carry 60 turns of 36 gauge B. & S. enameled wire, for the tuned plate, and grid tickler windings. The centre four slots each have 200 turns of 34 gauge B. & S. enameled wire, this being the self-tuned e.h.t. winding. A 6V6 tube is used oscillator, and the output voltage is readily controlled by varying the plate voltage of the tube. A filament transformer, 4 volts at 1 amp., insulated for 3,500 volts, was made for the c.r.t. filament.

Fig. 6 shows a circuit of the r.f. e.h.t. supply.

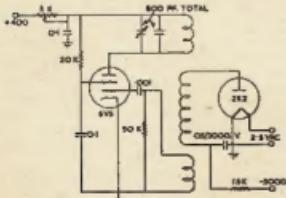


FIG. 6. F.S.S. E.H.T. SUPPLY

PHOTOCELL AND PREAMPLIFIER

The 931A photocell used is a multiplier type, with a nine stage multiplier. Upon the incidence of light, electrons are emitted from the photocathode, and electrostatically focussed on to the first dynode. The dynodes are treated to emit copious secondary electrons. Provided that they emit more secondaries, than primary electrons received, amplification takes place.

By focussing secondary electrons progressively on to the next dynode, considerable amplification is possible (up to 200,000 times). The final anode will therefore collect many times the electrons emitted initially by the photocathode. The tube is not frequency sensitive, electron transit time being the only limitation, which is far above video frequencies.

Fig. 7 shows a schematic of the photocell and preamplifier.

For convenience in circuitry the final dynode is earthed, and 800 volts negative used to provide about 90 volts per dynode, for the multiplier. To avoid degeneration, this e.h.t. supply must be heavily bled to swamp the dynode currents. For this reason, the voltage divider consists of 20,000 ohms per stage, giving an e.h.t. bleed of 4.5 Ma.

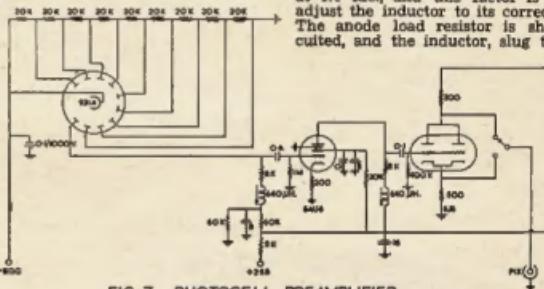


FIG. 7. PHOTOCELL PREAMPLIFIER

To maintain accurate dynode focus, the dynode to dynode potentials must be equal, so reasonably well matched (2%) resistors were used.

The anode of the 931A is fed from a regulated positive 255 volt supply, to apply 125 volts to this electrode, through a decoupling network.

In order that the frequency response of the system, before high peaking, should be substantially flat from 25 c.p.s. to 1 Mc., shunt peaked R.C. amplifiers were used throughout. The description of the method of shunt peaking which follows, refers to all the video amplifiers, except in the video mixer, where anode loads are so low that peaking is unnecessary.

SHUNT PEAKING

In this, the anode load of a stage consists of a resistor and inductor in series. They are so proportioned, that together with the total shunt capacitance of the stage, a flat response is obtained to the frequency desired, and a higher stage gain can be obtained than in an uncompensated stage.

The shunt capacitance of the interstage coupling elements to earth, and total input and output capacitance of

the R.C. coupled tubes, is found as follows:

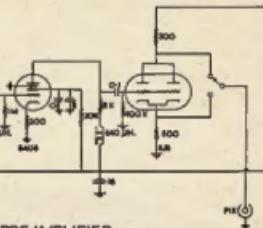
1. The load resistor is replaced by an inductor of known value.

2. A signal is injected into the grid of the tube, which has the inductor as load, from an r.f. signal generator. With a vacuum tube voltmeter the frequency at which this total capacitance resonates with the inductor is found. From this frequency, and the known inductance, the shunt capacitance can be calculated.

As the measured capacitances were of the order of 24 pF. in each case, the reactance at 1 Mc. was around 8,000 ohms. This reactance controls the value of the load resistor of the P.E. cell and the video amplifiers.

The load resistor in the anode of each stage, was made equal to the reactance of the shunt capacitance at 1 Mc. With this load, without compensation, the response would be down 30% (3 db) at 1 Mc. An inductor is now inserted in series with each anode load resistor, with a reactance at 1 Mc. of half the anode load resistance. The response will now be flat to 1 Mc., falling rapidly at higher frequencies.

Under these conditions the inductor will resonate with the shunt capacitance at 1.4 Mc., and this factor is used to adjust the inductor to its correct value. The anode load resistor is short circuited, and the inductor, slug tuned, is



resonated at this frequency. The short circuit of the anode resistor is now removed, and compensation has been effected. Each stage is adjusted individually.

At low frequencies (25 c.p.s.), the factors causing loss of gain are the reactances of the coupling capacitors, and of the cathode by-pass capacitors. Large coupling capacitors are used, with negligible loss, and the cathode by-pass was omitted, permitting degeneration, but not a serious loss of gain.

The 6AU6 preamplifier has a gain of about 35, which is sufficient to swamp noise, and provides a level to the cathode follower well above the hum level from the cathode of the cathode follower. With transparencies, an output of 1 volt peak/peak is easily obtained.

The cathode follower is a 6J6, with both triodes strapped in parallel, and with plate and cathode loads of 500 ohms. The plate load resistor assists a signal of opposite phase to that at the cathode to be obtained, but at a higher impedance. This enables a positive picture to be obtained from either a positive or negative transparency, and assists in correction, where the polarity

(Continued on Page 10)

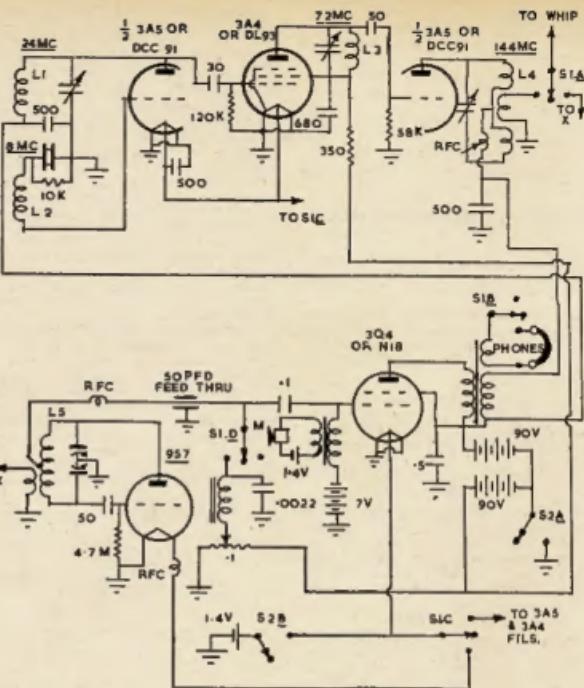
BATTERY PORTABLE FOR 144 Mc.

BY J. BAIL,* VK3ABA

A 50 Mc. low power battery portable using a crystal controlled transmitter and super regenerative receiver was described in May, 1951, issue of "QST." The transmitter consisted of one 3A5 twin triode in the r.f. section and a 3Q4 for the modulator. With a standard 8.4 Mc. crystal one triode section of the 3A5 served as a regenerative crystal oscillator on 25 Mc. while the other triode section was a frequency doubler final on 50 Mc.

The possibility of obtaining output on 144 Mc. from one of these tubes suggested itself. The only changes necessary were to provide an appropriate standard crystal, fundamental frequency 8 Mc., and, secondly, replacing the 50 Mc. output circuit with one on 144 Mc., thus making the frequency multiplication in the second section of the tube, six times, i.e., from 24 Mc. to 144 Mc.

A unit was built up on rather similar lines to the 50 Mc. job mentioned. Since a combination output and modulation transformer (from a 108 disposals Army set) was available, only one tube, a 3Q4, was used in the audio section for both transmitting and receiving; with a 957 as a super regen detector. Using a 90 volt minimax B battery for the h.t. supply, the unit worked effectively considering that the r.f. output was, naturally enough, extremely low. In



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combination with a quarter wave whip antenna it was possible to work the home station from a good location two miles away. However, in order to improve results from the nearer shielded locations, it was decided to increase the output from the final.

An extra tube, a 3A4 pentode, was installed as a trebler following the crystal oscillator to drive the final as a doubler. This meant more current drain on the batteries, but, as space was available in the case, two 90 volt batteries were installed, one for the 3A5 and 3Q4, the other for the 3A4 and 957. The improved performance made this well worth while.

The case for the rig was made from a standard 10^{3/4}" x 8" x 2^{1/2}" aluminium chassis with the edges bent to form flanges for attachment of the back with self tapping screws. This leaves a space of two inches in the case.

The operating arrangement is to wear the unit to the side of the chest by means of a strap over one shoulder. A section of disposals military webbing was used for the strap. The whip antenna, 1' 7^{1/2}" in length, plugs into a co-axial connector in the top of the case, and the controls are easily accessible with one hand while the other hand is available to hold the telephone handset.

The diagram shows the arrangement of the major parts. Some of them are mounted on a shelf which divides the case into two. The crystal socket is

arranged for external plugging in of the crystal and a four pin miniature socket is provided for the lead to the telephone handset.

The change-over switch, S1 (A, B, C, D), is a four pole, three position midget single wafer rotary job and embodies the following functions:-

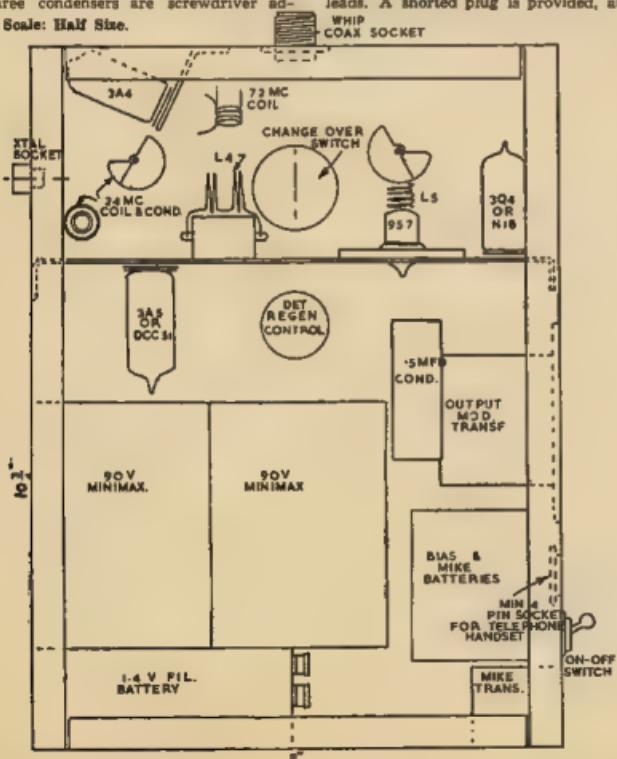
- (a) Aerial changeover.
- (b) Connects the A battery to either receiver or transmitter tubes (the h.t. batteries being permanently connected to the tubes except when S2 (A, B) is open).
- (c) Closes the low impedance headphones circuit in the receive position.
- (d) Opens circuits the 957 plate supply lead in the transmit position.

The double pole single throw switch S2 is turned off when the set is not in use otherwise the 3Q4 and potentiometer will draw current when S1 is in the central position.

TRANSMITTER TUNING

The tuning condenser in the crystal oscillator circuit has a maximum capacity of about 40 pF, and in the trebler plate circuit a 3-12 pF ceramic trimmer is used. The final output circuit is tuned with a 1.5-7 pF ceramic trimmer. These three condensers are screwdriver ad-

Scale: Half Size.



justed from outside. Indication of grid current with a temporarily connected meter in the trebler stage, served for checking crystal oscillator tuning, and grid current appears when oscillation takes place.

It was necessary to make certain that the crystal was controlling the oscillation, some adjustment of the amount of feed back being necessary. A communications receiver with an S meter provided an additional means of checking output, the circuits having been previously lined up with the aid of a grid dip oscillator. In peaking the trebler stage, maximum grid current in the final was aimed for. The final was then peaked with the help of S meter indication in the receiver with two metre converter.

To economise in battery current, it is essential to keep transmissions brief. A "B" eliminator supply was found to be most useful when tuning up and testing.

In this connection, a practical suggestion has been made by the Technical Editor applying to bench testing of any portable or mobile gear which is normally operated directly or indirectly from batteries. This is to install a socket in a convenient location in the gear, connected in series with the internal supply leads. A shorted plug is provided, and

when testing at home this may be withdrawn and replaced by one with supply leads running to some self-derived power supply in the shack.

COIL DATA

L1—14 turns, 9/16" diam.

L2—8-10 turns, 3/8" diam., wound in opposite direction to L1, mounted inside L1, with crystal end coinciding with cold end of L1.

L3—4 turns, 3/4" diam.

L4—4 turns, 9/16" diam.

A.O.C.P. CLASS

The Victorian Division A.O.C.P. Class will commence on Thursday, 30th July, 1953. Morse and Regulations are held on Monday and Theory on Thursday evenings from 8 to 10 p.m. Persons desirous of being enrolled should communicate with the Secretary W.L.A., Victorian Division, 181 Queen Street, Melbourne (Phone FJ 6997 from 10 a.m. to 4 p.m.), or the Class Manager on either of the above evenings.



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ZATW—T. E. Whitfield, 12 River Rd., Oakley.

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QLG—G. N. Chapman, Royal Hotel, Mount Garnet, North Queensland.
ENJ—N. Jones, 31 Swan Terrace, Windsor, Brisbane.

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SCV—G. V. Campbell, C/o. A.W.A. (Box 13),
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ALTERATIONS

New South Wales

2FV—"Signaling School," No. 6 Jetty, Circular Quay, Sydney.
2XU—405 Miller St., Cammeray.
2AGW—19 Traralgar Street, St. Leonards.
2AFW—223 Cornish Street, Broken Hill.
2AIP—255 Maher Street, Hurstville.
2ARK—
2ARL—Station 219 Pacific Highway, Hornsby;
Postal 68 Eastwood Ave., Eastwood.
2AVM—Flat 3, 9 Hipwood St., North Sydney.
2AVP—Station 1, Albatross Motel, Canberra City;
Postal 100 Reid House, Canberra City.
2AWH—10 Robert St., Belmont.

Victoria

3AO—Flat 4, 552-4 Victoria Pde., E. Melbourne.
3EW—200 Lygon Street, Carlton.
3IN—314 Elizabeth Street, North Balwyn.
3NU—315 Canterbury Road, Canterbury.
3PV—28 Narong Road, Caulfield North.
3QN—42 Barkly Street, East Oakleigh.
3RU—12 Keoonong Street, Nunawading.
3WS—12 Denbigh Street, Frankston.
3AHM—York Way, Aspendale.
3AJG—Embury Street, Boronia.
3AMZ—54 Cummins Road, Moorabbin.
3ANU—Postal Address: 318 Canterbury Road, Canterbury.
3APV—Station: C/o. O.T.C. Receiving Station, Rockbank; Postal: 78 Narong Rd., Caulfield North.

Queensland

4RL—Brenda Street, Mornington.
4WL—C/o. J. P. Baker, 50 Cromwell Street, Wooloowin.
4XD—Station 18 Garrick St., West End, Townsville; Postal: C/o. Station 4TO, Townsville.
South Australia
5CU—7 The Grove, Dulwich.
5GF—255 Angus Street, Adelaide.
5HE—Postal C/o. Mrs. Goode, 26 Areland Ave., Trinity Gardens, Station: National Bank, John St., Salisbury.
5LU—10 Dwyer Avenue, Oaklands Estate.
5RF—Alice Terrace, Murray Bridge.
5RF—Name should read: P. R. Parsons.

DELETIONS

New South Wales: VKS 2KX, ZER, ZIN, ZCF,
ZAH, ZAKY, ZAV, ZATF.

Victoria: VKS 3HV, 3KL, 3LC, 3MJ, 3ZW,
3AGF now operating under VK4GL.

Queensland: VKS 4AD (now operating under
VK5WAD), 4UK, 4PV, 4LH.

South Australia: VKS 5CV, 5EB (now operating
under VK2ZEB).

Tasmania: VK1TNM.

Territories: VKS 2FM (now operating under
VK5EFM), 1EM, 1JW, 1RR.

REMEMBRANCE DAY CONTEST

EDITORIAL

(Continued from Page 1)

Amateurs in the VKI call areas have expressed their keen desire to participate in the annual Remembrance Day Contest, not because they can expect to compete for the Trophy attached to the Contest, but because of the spirit on which it was founded—the remembrance of those of our ranks who passed beyond the vale in the service of their Country during two world wars, in particular World War II.

There is no reason why they should not have this privilege extended to them except that, administratively, it is difficult from the point of view of scoring.

Federal Council has agreed to their participation, and in doing so has decided to award six points per contact per band for VKI contacts for all States. Until the result of their participation is analysed in the final scores, it is justifiably fair to award the same points in each State.

The Federal Council has authorised the Federal Executive to obtain the Log Sheets from the VKI call areas and this will be done in time for the final result checking.

Rule 5 is amended to read: A station may be operated by more than one operator under the station call sign provided that operators, other than the station licensee, submit a separate log under his own call sign for contest purposes.

The Contest will commence at 1800 hours E.A.S.T. on 15th August and continue through until 1758 hours on the 16th August. Rules and scoring details will be found on page 10 of last month's issue.

AMATEUR TELEVISION

(Continued from Page 7)

of a test pattern can be reversed at will. At the cathode, a positive signal for white is obtained.

POWER SUPPLY

In order to avoid changes in gain of the 231A, with changes in mains voltage, and to avoid mains fluctuations effecting the video output of the low level stages, regulated f.t. of 255 volts is used throughout the preamplifier.

800 Volt Supply.—Another r.f. e.h.t. generator is used for this negative supply. A 6V6G oscillator tube, and a coil similar to that for the flying spot scanner gives this voltage at 4.5 Ma

Due to the lower voltage and higher current, the transformer windings are different, in that the e.h.t. winding is in three slots, each of 100 turns, the other windings and spacings are for the other unit.

(To be continued)

CHANGE OF ADDRESS

W.I.A. members are requested to promptly notify any change of address to their Divisional Secretary, not direct to "Amateur Radio."

bers of the Advisory Committees. They have no fear of having their names published because they are out to help the Amateur, not hinder and victimise him.

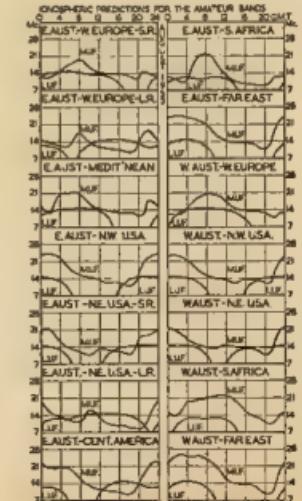
The Institute members of these Committees are nominated by each Division annually to protect the Institute members' rights as well as to assist the Department in keeping law and order on the Amateur bands. Don't forget that in representing the Institute these members have a directive, a policy, something to work towards and which is laid down in the Institute records and the rules under which the Committees function.

The non-member representative has a more difficult task because he must represent Amateurs who are not organised to assist or direct him, but nevertheless he is a man chosen by the Department for his fair-mindedness and his impartiality in dispensing discipline which to members of the Institute or otherwise.

You can talk to these men on the air and they will be pleased to co-operate with you in advising you where you or your transmission is at fault. If you receive a pro forma for some misdemeanour, it shouldn't be because you have erred for the first time. You have a say in putting the Institute man there on the Committee to protect your own interests so you should be sure he has the qualities required of him—justice, impartiality, and a sense of fair play.

FEDERAL EXECUTIVE

PREDICTION CHART FOR AUG. 1953



FIFTY MEGACYCLES AND ABOVE

NEW SOUTH WALES V.H.F. GROUP

A meeting of the V.H.F. Group was held at Science House, Small Hall, on 31st June, 1953. The attendance was good and included a number of visitors from other V.H.F. groups. V.K.S. 10A, S.H.E. 2PU, 2ASK, 2OF, 2HO, 2LG, 2AOA, 2PK, 2QZ and XYL, 2ARF, 2AST and 2ASU. After the usual business, Dr. Bob Black, 2LG, gave an interesting talk on his recent trip to the recent visit to the Trobuan Islands. This was particularly interesting, showing living conditions and type of people on these islands. We all wish to thank Dr. Black for an interesting evening. The members of Bob Winch, 2AOA, then gave an interesting resume of circuit drawing and of the difficulties therein. A vote of thanks was given by Alan 2AST to Dr. Black and Bob Winch on behalf of the V.H.F. Group.

Alan 2ASZ was the recipient of a very nice cup won by him on the mobile day some months ago. Alan was on Mt. Tomar operating from a car during very wet weather and put up the top score. Congratulations Alan. We are sorry to hear of the departure of 2ABF from V.H.F. Group. He has a less than 200 watts off to VK3 land, with whom his "Au Revéz" and best of good luck. We welcome 2AC¹ of Manly to the v.h.f.r.s., he was heard in contact with 2ASB, kept a lock open for him on 146 Mc. 2LG has a 11W in power these days and puts out a healthy signal. 144 Mc is v.h.o. controlled. W.I.P. 2SA has been getting away and has heard 2BZ of Newcastle at 8S to 8S and hopes to contact him. Bill 2AZB has acquired a new rx, a BC46, also has a new xtal cascade converter with old 2L1. He has been coming in on 2M coming in strong to 8S. He has not been too well. 2WJ has been off for a while, what's wrong John? 2MC and 2NO have a pair of 1012's for \$15 Mc. and hope to be on 244 Mc. 2ARF has been busy. Look out, 2ASU is fading out over the winter as most signals are weak from South and West. The Northern boys have been heard at 8S to 7. 2UH coming in when they are on.

Keep a look out for 2ADB at Wahoonga, Sydney, about 200 cycles above whatever frequency you are working. He has a walkie talkie, but he is high up. All 2CE has his mobile gear permanently installed in his car and has just finished a xtal converter for 144, and now on the hook-up. 2AL has a 2L1, but he is not using it. 2QZ, I wonder why? He has an excellent signal. 2APG has as usual been doing a bit on 144. 2AYF threatens to come back on 144 one day.

2FO having a spot of bother with his 144 rig. Transistorized, and his frequencies are 144.12 and 144.8. Carriers have been heard from Dubbo direction, but they were on phone and too weak to identify. 2HE has a good signal and is located.

The W.I.A. Award for 100 contacts on 144 Mc. is now an accomplished fact. So go to it boys and gain this Award. 100 cards must be held to gain this Award. The QSL card situation is grim on 144 Mc. Some clubs report that they have had 100 contacts in the Award because they cannot get verification. Now what about a little co-operation?

Harry 2AJZ has been putting out some solid signals of late. 2AOG came out last night on 144. 2ARF, 2VW, 2ASU and 2UH are up again with a better signal, stability and quality both good for mod, csc. Tom 2IY and Steve 2YK have been on 144 again, glad to hear them on again.

On Sunday, 26th June, a very successful and pleasant field day was held by the V.H.F. Group of the V.H.F. Group. The mobiles built by Peter, 2LG, assisted by John 2ANP, assisted by the mobile champion, Ezz Griffiths. The fox, after some strategic manoeuvres, went into hiding some 20 to 30 miles from Sydney. The first official call was given at 144 Mc. and when the fox was convinced that the day was now on, the bounds, comprising of some eight mobile units, started to find the fox, backed by at least six or seven home stations. Bearings were taken and given to a club lead on mikes and the fox was found and as usual some funny hearings were given and taken. All seemed to have a very happy day.

The bounds were 2ABZ and 2HO, 2AJZ and 2AZK, 2HL and Cess Cronan, 2OA and 2LG, 2AOA, 2PK and 2ASU. Next to Neford, 2AOA, the bounds were 2PK and 2ACTD. The fox was Bob and Harry who had their XYLs. In addition, there were a number of walkie talkies around and what a din they made for miles around. The rx's, being as good as the tx's, the first to be heard was Kevin 2AOA who found the fox at 1145 am. Next in was Leo 2KS at 1230 pm. The rest came in in a heap, except for Alf 2CE who sent an SOS which was picked up by Cess Cronan on his walkie talkie. Cess directed Alf in; 2CE was

only half a mile away. We were very pleased to see so many turn up, making it another victory in the day. When is the next!

Our congratulations go to 2AOA, 2LG was a good effort. With the fox only in the a.m. and went to Penrith and from there he bounded the fox who finally was about two miles from Narrabeen near Cobbleby. Congratulations also to the fox, the hide-out was very good.—EZO.

VICTORIAN V.H.F. GROUP

Another interesting lecture was given at the June V.H.F. Meeting by Kevin JAMES, the subject being "Modern Techniques". He had a disposal unit which showed stages in the evolution of the modern hearing aid. The problems encountered with these devices are common to the electronic field generally, with particular emphasis on miniaturization and economy of batteries. Kevin commenced the lecture with a brief outline of the mechanism of human hearing, together with the types and variations of deafness encountered in individuals. There may be conductive or mixed deafness, progressive or fluctuating deafness, and some new a hearing loss is only one portion of the audio frequency range, etc. This explains the wide variety of requirements of instruments developed to help us hear, and some care is therefore taken in preliminary tests with people who contemplate using them.

Some idea of normal hearing is shown by the fact that the normal spoken voice should be audible to a person 40 feet away. With this as a reference level, the degree of hearing loss of a person for a given frequency will be fairly accurately determined in decibels.

The main variables that a designer of these aids has to deal with are: (1) Maximum output; (2) Mean amplification; (3) Shape of response curve; (4) Automatic compression; (5) Conversion efficiency, the ratio of acoustic output to electrical power input; (6) Power source. The aid consists of two or three valves, audio amplifier, in some cases with a.v.c., and employing subminiature tubes and other small components including crystal microphone and batteries in a typical size of $\frac{3}{4} \times \frac{1}{2} \times \frac{1}{4}$ inch, and repre-

sents the application of many developments in electronics and acoustics. The large number of questions showed that interest displayed in the lecture and Kevin was warmly thanked.

V.H.F. Meetings are held on the third Wednesday of each month in the Institute rooms, 181 Queen Street, 5th Floor, at 8 p.m. the next meeting is on 2nd August. The meeting on 2nd August will give a lecture and demonstration on the Geiger Counter. All are welcome to attend this meeting, so bring along a friend.

On the evening of 18th June, 3LN made a 2 mx mobile excursion to the eastern suburbs. His progress was followed by a team of 100 listeners, mostly V.H.F. including 2ADU, 2ED2, 2ALK, 2ABA, 2YK, as he negotiated the various hills and depressions on the route. The rx speaker served as a microphone while transmitting. Leo was running 3W. The total time-up, 2ATE, was about 6 hours. The 144 Mc. 2SATX final. The rx is a converter into a super regen second detector and the antenna, two dipole, at right angles as a single bayonet.

The 288 Mc. gang have been very quiet this month. 2AFB loaded the gear into the car, but since rx was not available, he had to use contacts 3A9HS building a converter using 2SDS SATK should be within the next few days. No news from 2AAP or 2ED2. 2QO can still be heard on odd occasions. 2ATY appears to have stopped, and 2ADU is now using a tape recorder. 2AFB planning new rx and tx. Tentative ideas being 5 tube super and m.o.p.a. using 2T28s driving an RKM4, should be ready before summer.

With the assistance of his friends in the N.E. Zone, 2AFB expects to have a mast over 3S, 60 ft. high should get out well. Sid also comes on 3 mx each Sunday at 7.30 p.m. beaming south from Nagambie. A 2 mx hook-up in the N.E. Zone is held each Friday night at 7 pm, and afterwards about 7.15 they stand by for calls from Melbourne and elsewhere.

As has been announced on several occasions an Award is available to those V.H.F. men making 100 or more contacts above 100 Mc. The rules are as follows: (1) Awarded to those V.H.F. Amateur Licensees who submit evidence of having contacted two way, at least 100 other stations on amateur bands above 100 Mc. starting from 1st Jan. 1948. (2) Confirmations to show the usual QSL information including call sign and location, date contact was made, band used and report. (3) All authorised bands above 100 Mc. and any authorised type of emission may

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be used, provided always that the Amateur Regulations are observed. (4) The claimant licensee may have operated anywhere within Victoria and either be on the station word or have been licensed portable or fixed or may have changed address. (5) Only one contact per licensee may be claimed regardless of band used or method of location. (6) Claims will be handled by the Secretary, Vic. Div., together with a legible written list of the confirmations submitted. The confirmations should be forwarded by registered mail and return registered postage should accompany the application. (7) All applications will be acknowledged and returned successful applicants. (8) The V.h.t. Group reserves the right to modify the rules if necessary (subject to sanction of Vic. Div. Council). (9) In case of any dispute concerning a claim, the "scrutineer" (at present the Chairman and Secy. of V.H.T. Group) decision to be accepted as final.

Overseas Amateur magazines report a period of excellent conditions on 144 and 430 Mc. in the United Kingdom and Northern Europe during the beginning of March. Many contacts were possible over relatively long distances with unusually high signal levels. A contact over a distance of 647 miles was made on 144 Mc. between GCBEBK on Guernsey (1.1 m. E22PR) and GCBADZ on GVAZAZ working ON4UV on 260 miles. GWAZAZ also had a cross-band contact with DLJFPM. In this case he was transmitting on 144 Mc. and receiving DLJFPM's 430 Mc. signal—JABA.

SOUTH AUSTRALIA

"DX without ditches," is the v.h.f. motto but I believe that the Pt. Lincoln Hams are soon to change it with signals across the Gulfs, so come on Wally, probe SVJ and SLT with one of your three-phase pitch filters, you both have what you want. Col SJC says that after calling in vain for nearly four weeks, he was surprised t'other Monday night at 1800 hours by SCK, SMC and STW who had suddenly come into life. It is now an experiment to join the "Limelight Leachers" at any time now—in fact before these notes reach the printers! Claude SCK is operating from the new QTH, using, I presume, some of his own distillate!

From that old dog, Col SJC, I have information that there is a very good brand of I.F.W. English ZC series filtering into VK5 land from disposal sources at the moderate outlay of five dollars. The g.g. is to rip out the r.f. end,

use a diode mixer with the 965 as the v.f.o. and leave the l.f. channel on 23 Mc. alone. They are best on 288 or 576 Mc. Coverage is up to 150-180 Mc.

Bob SPU is also converting an ASH4 into a double conversion rx. This has an i.f. of 55 Mc. with a SAG7x in the mix-up. Second converter to be a SAG giving 2nd l.f. of 16 Mc. The front end uses a 2nd stage feeding push-pull 6SL6 mixer. Ray SBT has ideas of using the ZC LPF unit, lengthening the l.f. stage alone (using VRBSs) and re-vamping the front end for two channels on 288 and 576 Mc. The EAM mode for 288 Mc. is an example running with T183 on the 288 Mc. end and R1L8 on 576 Mc. Co-axial mixing cavities give much lower noise figure with diodes—silicon diodes give good results but have limited current handling and can easily burn out. The EAM v.h.f. discriminator is taking the vag better. Think of the idea of adding a .1m discriminator to these wide band jobs and enjoy good reception from the mod. sec. I am very grateful to you Ray for your interest in this project.

Harry SBN has returned to the fold after two years' absence, using a "drain pipe" coaxial stop of the fire station tower. Lionel SLS is now very active using a super regen and mod. sec. Douglas SBY biting on the band and sending in his reports. SLC always good for 8 Mc. Fred SPM has a new ideal location on the 500 ft. level at Mitcham and should be good for some QSOs soon. Ted SMO back with us and with every opportunity for carrying on v.h.f. work. He is always able to give a lead with his technical ability.

Keith SMT says his frequency is 288.007 Mc. Clem, so you two can fight that one out! Col SRO is on 288.38 and in his rx he uses a 7100 Mc. xtal, multiplies 40 times to 288 Mc. and feeds out to a 6SL6 grid coupled to a hard calling 50C cat and listening on 28 m.m.s. real cross-band working. SKA, SJM, SKY all active on local skeds. SDR spending time on portable around the hills with Ahrol SMT active on 288 Mc.

From that old dog, Col SJC, I have not seen the Mid-ray Valley gang; they have not mechanical troubles. Harry SKW did in a pair of T183s when the crystal holder fell out of the socket, then the xtal followed and finally hit the metal bounce of the frame. Tom McRae was Tom's spud to SBX he has a "rubber" one that bounces all over the band! The 963 should make a very good grid-dip cat. Tom. Send it down for calibration.

Incidentally it can pay off on these v.h.f. to have a separate antenna system for tx and rx. It is difficult to make a feeders work well both ways, and generally we make compromises. In reception, an impedance mismatch between the antenna and the line is not nearly as serious as a mismatch between the line and the feedpoint. Much worse occurs on the line resulting in greater loss than the dissipative and by radiation from the feeder. A mismatch between antenna and line, on the other hand, affects only the efficiency of power transfer. In the case of transmission systems, the situation is reversed. If difficulty is experienced with matching into the rx, place a piece of metal foil around the 300 ohm ribbon and slide it back along the line away from the rx until signal improves.—SJO.

2nd Mcs still the most popular band in this State. Five years ago this band was almost deserted except for one or two stalwarts. About three years ago new stations began to appear nightly and the stage has now reached where we can turn out 1000 on any night of the week and have many stations in QSO. On week-ends distances in the order of 30 to 80 miles are covered by chaps operating portable and QSOing Adelaide stations. (Nobody has broken the existing Australian record of 1000 miles.)

Since last April BRO and SMT have been experimenting with xtal controlled txs and rx's, and from the 34th May have been operating consistently on 288.28 and 288.00 respectively using a common driver and a dual balanced converter at both ends. BRO's tx is a BC65SA (see section of SCR522) driving a separate 522 final amp. Last 533 BC65SA tripling from 28 Mc. to 288 Mc. with half wave lines in pi bridge. The receiver is a 6SL6 grid drive with 1.1 Mc. xtal multiplied 40 times. 533 push-pull mixer with half wave grid lines. L.t. tuning range is 4-8 Mc. SMT's tx BC65SA driving a QQC04/15 final amp., last 533 tripling as above. The receiver is a 6SL6 grid drive with half wave grid and plate lines, grid drive to QQC04 amp. with 250 volts on BC65SA driver is 1.9 Mc. 271v. on driver gives 2.0 Mc. Ig to Q; plate input to QQC04/15 final amp. is 15 watts. Rx 7100 Mc. xtal, multiplier 40 times. 533 push-pull mixer with half wave grid lines. If. range 4-8 Mc. SNC has completed his xtal converter (similar to BRO's) and has started constructing a xtal tx for the band using a QQC04/15 in the final.



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DX NOTES BY VK7RK

The DX notes in a current issue of one overseas magazine began with this question: "Do we detect a slight glimmer of light through the fog or is it imagination?" and express the opinion that the bands are just a very little better than the corresponding period twelve months ago. Maybe this is right or again maybe it's like the drowning man clutching at the proverbial straw—I'm not certain.

If the farmer, loud cheers because we're around the corner and that's as good as one point to any signal, but if the latter, let's get a handful of that straw as white that's meant or the corner is not all that far away. Maybe it's the mood or something, maybe it's the mood to remember. It has been logged, a goodly bunch of calls are listed. Take a look at them and see if they don't add up to a respectable tally of countries in most parts of the globe.

Someone suggested that the bands only seem
scar because everyone is waiting for the other
fellow to call CQ and no one considers a country
OK if he has worked it before.

5.5 Me. produced nothing that was rare, but on odd occasions the Ws are there and an

5 Galvin Street, Launceston, Tasmania.

DX C.C. LISTING

PHONE

Call No.	No. Ctr.	Ctr.	No. Ctr.
VK4HR	1	VK4WVJ	17 122
VK4SU	2	VK4RZ	20 110
VK3EE	10	VK4JP	8 114
VK4RU	2	VK4DO	20 112
VK4JD	1	VK3ATX	26 113
VK4KS	9	VK3EMS	34 109
VK4KW	4	VK4NC	28 109
VK4KQ	11	VK4O	20 103
VK4PJ	21	VK4GDT	13 103
VK3AAWW	16	VK4GAH	15 102
VK3LJE	7	VK3SPJ	19 101
VK4WF	18	VK3IG	5 100
VK5SD	9	VK3GG	18 100
VK4RT	22	VK3LC	27 100

occasional KH6. 4CW bears the W phone well but is also active.

7 Mr. Hill open with some statistics, from BERSUS. Since the beginning of 1965 Eric has heard on this band only 100 countries in 33 zones and has sent out \$31 reports—that is just six months' listening, speaks for itself. The pic of this month includes CBHF, COAAG, DUDJ, EAB, JAJAA, JASAA, KGSFAA, PYQDT, SWARAC, PYHTN, VEDEE, VUKIAF, VYQDT. More over 100 Europeans. The VQ2 and PY3 were audible 2130Z-2200Z. On phone was WP3JEL.

SAH also spent some time on the band with results like W8, KW6BB, ZM8AA, V7EAE, PK1CAF, VK1AF, KJ8FAA, VR2AS. From the 10th through spending a few days polishing off the W8. The W8. was strong enough to lose the math. R. tranny and is QRT awaiting a replacement. Subject to the QSLs and the W8. has made W.A.S. under one month, which is quite a record. We use CQ mode here seen fairly indicative of the general trend and are, evenings: W, KL7ATZ, KP4DJ, KP4DZ, KP4DZ, KP4DZ, and around 2100Z-2200Z: USOEE, USAZY, UAUPE, PAACG, PASH, DL1PA, SLSHE, SM8CKE, SM8BXY, CHF7M, 171TKK, PY4P0D.

The calls really summarize the band—early morning there are plenty of European signals although not easy to work, an occasional African, and watch for those PY's for that South American contact. Short skip then until afternoon when the Ws begin and on a very odd occasion, a weak European appears via the long path, then the Ws, VE, KLI, etc. take over for the evening.

the daylight hours—evidently brings a fair JA-
KG stations—not very many and not very
powerful—but making their re-appearance.
The European stations are also making their
re-appearance on the band places like 30000
and on occasions are at really good strength.
The W's via Africa are there until about
0000Z. SAOU reports South Americans also
there. The European stations also there.
From 0100 onwards the Central American
stations follow in turn by the WS, VE, KL7
and rest, around 0700 with shorter skip KG6,
etc. Between 0600-0730 quite a few ZS
stations are workable giving, under most con-
ditions, all continents audible during some part
of the day.

Sources of supply for all this are 3AHH with WAIVI/KWS, FORAI, VYRAS, KLG1, FOAR, VYKGM, KPLUE, and on favour his new WVKW. WL, KLTAA supplies, per VYBDS, KHMASW, VETRR, VEWBL, KWBBB, CECB, VYDZ, KAK, MA, MEL, KGE. All this on .432 worked well, but the QSLs for DX C. are very slow in arriving. Lee is well over the 100 mark now, but, the QSLs seem to be a common complaint.

In a few short burns managed
FIRE, VSB, VSFN, WSIFN, CJSB, FRAEB,
KCMAB, KLGJ, KMAN, KZLBB, KZLBB,
DUGRO, CTJJ, DLXZW, QZIN, PASOL,
PAQGQJ, PAUDW, HSOP, ON4GX, GW3DCY
C.W. phone provided XEWK, KLI, TAUQ,
VHF, XEON, W3H, W3H, W3H, W3H, W3H,
consistent of the phone seems to be VHF,
who puts in a beautiful signal down here. During
the week-end of the W Field Day Contest
one has to push the key, call a directional
antenna, and send a series of vees and
U's, etc. all the way back.

21 Me. is low down on the list this month with only two reports. From 3AMH who lists WZJFL, still consistently strong on phone, and from 4XJ who has heard KHF8s and Wa. The best I can manage is an occasional VK5.

22 Me.: It had to happen. Comes the day when 4XJ does not have a contact here all month and that day means no calls here this

A couple of interesting QTHs are. ZC5V5-Box 136, Sandakan, B., North Borneo, 5A3CB-Forces Broadcasting Station, Bengkali; QS-Manager for Malaya is VS3DV Box 600, Penang.

A few random jottings gleaned from sources found firstly on the apparent spread of the MP4 system. Current system for the distribution of MP4's is MP4-Bahrain. Kuwaiti MP4-Qatar will be in Bahrain and their QSL address will be in Qatar in their QSL addressees C/o. Communications Bahrain Petroleum Development Co. The disappointment is being expressed over the absence of QSLs from EAEDC while operating at Iota. My disappointment was in not working them. However, I am still awaiting word from KV4AAV concerning the news that EAEDC has now been taken over by NEMSY plans expeditions to Iota and Rota De Oro in the not distant future.

Reference last month to the DX Editor as "P.I.M." as being VK2AK should obviously have read VR2AK—Sorry

Not being a phone man I wouldn't know the answer to this one, but why is there so much phone activity immediately below 14200 Kc and in lots of cases 50 Kc of silence between 14300 and 14350 Kc?

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894-23	500	2, 3.7, 8, 12.5	2 *50-10,000	5	Line to Voice Coil
890-22	2,500, 5,000	2, 3.7, 8, 12.5, 15	1 *40-15,000	15	Single 807, EL34, etc., to V.C.
896-9	8,000, 10,000	2, 3.7, 8, 12.5, 15	1 30-15,000	15	P.P. 6V6Gs, A or AB1 to V.C.
897-9	8,000, 10,000	100, 125, 186, 250, 500	1 30-15,000	15	P.P. 6V6Gs, A or AB1 to Line
763-9	3,000, 5,000	2, 3.7, 8, 12.5, 15	1 40-20,000	15	P.P. 2A3a, A or AB1 to V.C.
809-26	500	2, 3.7, 8, 12.5, 15	1 50-20,000	15	Line to Voice Coil
870-26	10,000	2 or 8	1 *20-20,000	**8	P.P. 6V6Gs or 807s as Triodes
871-9	10,000	2 or 8	1 *20-20,000	12	P.P. 6V6Gs or 807s as Triodes
872-9	10,000	3.7 or 15	1 *20-20,000	12	P.P. 6V6Gs or 807s as Triodes
891-22	8,000	83, 100, 125, 166, 250, 500	1 50-12,000	35	P.P. 807s, AB1 to Line
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DIVISIONAL NOTES

FEDERAL

W.L.A. MEMBERS ON AMATEUR ADVISORY COMMITTEE

The following members of the W.L.A. are representatives on each State of the Commonwealth. Other members are Officers of the Wireless Branch of the Postmaster-General's Department in each State of the Commonwealth, and an Observer chosen by the Department to represent the non-Wireless Institute Amateurs. In addition the Department appoints a number of Observers. The Editorial in this issue of "Amateur Radio" gives details of the Committees' organisation and functions.

New South Wales

Mr. D. Duff	VK3E0
Mr. J. A. Lindsay	VK3AAK
Mr. J. C. Franklin	VK3AAT
Mr. H. Y. Howell	VK3AYP
Mr. L. H. Taylor	VK3CL
Mr. V. H. Wilson	VK3JW

Victoria

Mr. R. A. C. Anderson	VK3SWY
Mr. A. L. Brabant	VK3SB
Mr. C. R. Gibson	VK3FO
Mr. G. W. Manning	VK3XJ

Queensland

Mr. J. C. Files	VK4JF
Mr. G. Harmer	VK4XW
Mr. H. T. Hewitt	VK4PD
Mr. L. E. H. Mallinson	VK4LM
Mr. J. F. Pickles	VK4FP

South Australia

Mr. H. L. Austin	VK5AW
Mr. L. E. Davis	VK5HE
Mr. R. J. Allister	VK5JO
Mr. W. W. Parsons	VK5PS
Mr. G. E. Wienecke	VK5GN
Mr. L. R. Worrall	VK5WF

Western Australia

Mr. R. H. Campbell	VK6AKU
Mr. W. E. Coxon	VK6AG
Mr. C. Hutchins	VK6HC
Mr. H. T. Mulder	VK6MK
Mr. W. Schofield	VK6WS
Mr. W. S. Watson	VK6GW

Tasmania

Mr. T. A. Allen	VKTAT
Mr. T. L. Calvert	VKTAT
Mr. V. F. Doherty	VKTJD
Mr. L. W. Edwards	VKTLE
Mr. L. R. Jansen	VKTJL
Mr. R. D. O'May	VKTOM

Tenure of office as a member of an Amateur Advisory Committee is normally for twelve months, a new body of members being formed in January of each year.

AMENDMENT OF REGULATION 110 IN THE HANDBOOK

After discussions with the Postmaster-General's Department, Wireless Branch, Central Office, an agreement has been reached to amend Regulation 110 of the Handbook for the Guidance of Operators of Amateur Wireless Stations to include the 50 Mc band.

The Regulation as it stands, reads as follows.

"Except for brief tests or adjustments or in the authorised frequency bands from 144 Mc. to 146 Mc. the amateur station licensee must not cause a carrier wave to be emitted from his transmitting equipment unless such wave is subject to intelligible modulation. Prolonged tests or adjustments in the amateur amateur frequency bands below 144 Mc. must be made on an artificial aerial."

This Regulation in effect means that an Amateur Radio station on 144 Mc. or above can never duplex providing attention is given to Regulation 134 in respect to giving the call sign of the station working and the station being worked with the addition of "50 Mc." to Regulation 110 interesting cross-band contacts can now be made to assist the v.h.f. experimenters.

TECHNICIAN LICENCES

Work has progressed on the introduction of Technician Licences and further detailed information will be advised shortly. Broadly, the examination will consist of a written examination for the same examination as the A.O.C.P. candidate except that he will not have to sit for Morse code. Hence, an A.O.C.P. candidate

who falls in his Morse code can apply for the instance of a Technician Licence, thus giving him the opportunity to conduct some experimental transmissions although limited in frequency and power output and time as he can pass the Morse code test for his A.O.C.P. How long he will be given has yet to be decided.

FEDERAL QSL BUREAU

RAY JONES, VK3MJ, MANAGER

The Radio Council of Cuba advise that the address of the QSL Bureau remains as Leslie No. 850, Habana, Cuba.

A list of the licensed stations in the Netherlands Antilles, P.J.Z., Zone 8, has come to hand. The list shows 15 stations on Aruba Island and eight on Curacao Island. The QSL Bureau address is Curacao, P.O. Box 200, St. Nicolas, Aruba, Netherlands Antilles.

Felix VK3AC has finally arrived back in Noumea after his extended tour through France. As he cannot regain possession of his old home until end of July, it is impossible for him to return to the air until September. He has gone through VK3AC, VK3AB, VK3AD and VK3C and acquired a gift of a Hallicrafters SX38 with burned out power supply, output transformer and resistors while in Vila. When serviced it will replace his BC301 with which he was not satisfied. On arrival in Noumea he has noticed many new buildings and was delighted to observe his antenna still standing. One of his first jobs will be the construction of a new broadcast station for Noumea. While at Tahiti he has FOAR 1000, the station which was temporarily inactive due to a change of QTH. He did, however, manage to extract from Georges a long overdue QSL for me and also one for VK3ZKA.

VK3EMM and VK3IRR are both still awaiting cards from the printers and will get busy on distributing them as soon as they come to hand.

It is good to hear Jim Widdup, VK3WFL active again from Chatswood, T.N.Q., after as he says, an absence of about 16 months. Jim, one of the most popular operators in the amateur service, was stationed at Darwin when that town was an important cable repeating centre some 40 years ago. Jim has a new rig running 100 watts powered by a Jap generator diesel driven, and plans to keep active at least each Sunday afternoon. Jim does not know when he will leave South again and expects to leave his bones in the Territory.

The R.F.E. again point out that contacts with Chandernagor, India, between 30th April and 1st May are not eligible for Awards as that location is no longer French territory. They also state that FMEMS is unlicensed and of course unacceptable as is also FKNQ for the same reason. F18 contact prior to September, 1963, are also not valid as stations there to that date were unlicensed.

George Meason, VK3GM, of Norfolk Island, gives interesting details of his gear which is made up from bits and pieces salvaged from an A.W.A. Televisor salvaged from the installation of a mobile yacht, "Rangia". The boat has just finished its tour to Sydney to participate in the Sydney-Hobart yacht race a year or so back. He has the advantage of two 50 foot masts and centre feeds the antenna with co-ax.

NEW SOUTH WALES

A Committee has been appointed by Council to attend to publicity matters of this Division. Included in their duties is the collection of Zone Group, Suburban and other notes, and to bring to the attention of the concerned members of importance to the general interest. These Divisional Notes, we feel, are a valuable contribution towards maintaining everyday interest in Amateur Radio. It is essential that notes be received not later than the 1st of each month. Address all notes to:

President, FEDERAL, Box 1734, Sydney.
The first general meeting to be held by the incoming Council was held on 20th June, with the President, Mr. J. Corbin, in the chair. Notwithstanding a cold wet and miserable night, the role of the members was enjoyed by all present. Evening, Mr. J. Reed, ZJR, delivered a most interesting lecture on 3.5 Mc. versus 144 Mc. for Field Days. This lecture, illustrated with slides, was delivered in a typical DR manner.

The Remembrance Day Contest, which commences at 1800 on 15th August, is worthy of the support of all Amateurs, and we suggest

that all members, wherever possible, take part and submit their logs to Box 1734. This is a good Contest—be in it.

Come along to the next meeting of the Division—7.45 p.m. on 28th August.

The Divisional Council has lost the services of two of its members, ZEO and ZKU. The loss of these two very hardworking members is a great blow, but both have resignations that rightly have first call on their time. Their resignations gives opportunities to others with time to, in turn, serve the Division. This is the reason these two are standing down, we hope temporarily. The Division thanks them both for all they have done, wish them every success and hope they will be back on some future Council of VK3. Bill, VK3EB, and Leo, VK3EF, who in radio goes back to 1945, are two of the most illustrious of long standing, takes one of the vacant positions. The other has yet to be filled.

VK3VLA, ZMI, ZAWN, ZASW, 2XU, 2YD, and Mr. and Mrs. LAW came to 2YC's for a get-together of the Monthly Gathering. This made it easy work and enabled a good deal of Institute affairs to be discussed. This is to be a constant night, so you are invited to come along to "help and talk." See you in August—ring MU 1000 for the correct Thursday.

HUNTER BRANCH

The June meeting of the Hunter Branch was held on Friday night, 18/6/63, at Tighe's Hill Technical College with the President, John Clark, ZDZ, in the chair. The lecturer for the evening was Ken Greenhill, VK3KG, on "Audio Amplifiers". This lecture was well received as was proved by the interest shown at questions asked.

The VK3 branch has become increasingly popular over the last month, beginning with Ron SGT obtaining TX and RX for 144 Mc. Ron is using SCR332 as his tx, and RF 2XY has now obtained an SCR332 which he has running on 144 Mc. and has put on the TX signal. Leo ZHJ has 144 Mc. gear, his tx is 144 Mc. and his rx is ZAOB has mod. osc. and rx and should be on 144 Mc shortly. Max ZOT reports gear almost ready for 144 Mc. transmitters. Bill ZPJ has made some comments on 144 Mc. ZC100 is now available for 144 Mc. reception. RU 3XK has 144 Mc. and Ron has SCR332 tx and rx which he hopes to put on the band when time permits. Fred ZAGY, Jim ZDC and Dave ZJB also attended. Bill ZPZ left for Asia and is en route to shifting gear to VK3 later in the year. Lionel 4DR visited Bill recently during the time the ship on which he is radio operator was in port. New ZANA popped up occasionally in T. Jim ZDC left for more often. Norm ZAOB made brief visit to VK4 during month to visit Noel 4PQ in Bell; he also met Eric 4XN in Dalby, Cedric 4ZD and Allen ZAOB in Toowoombe and Bell.

Don't forget the August meeting to be held at Tighe's Hill Technical College on Friday, 18th August.

Hanmer Branch Winter Social

One of the main events of the month was the Social held by the Hunter Branch. A good number of members and their wives, including the Divisional President and his wife, and Mrs. Jim Corbin. Dancing and games were the order of the day until about 9 p.m. when it was announced that the Hunter Branch would be leaving for a dinner at the Sultan, Harold Saham. The Sultan, Harold Saham and George ZAGD as Sentinels and Associate Frank Stubbs as the Sultan's aide de camp, all suitably arrayed entered, the audience knew they were in for a treat. To start off the evening the Sultan's "girls" danced in and performed a "graceful" dance which really brought down the house. With short cyclamen paper skirts, white petticoats and frilly white undies, plus a large bow in the hair, and what looked like beads rings, see-saws and what have you, these "girls" had to be seen to be believed. Fears were held that Ron ZAJ would laugh himself into hysterics, but am happy to report that such was not the case.

The Sultan's "girls" were Johnny ZDZ, Variety ZSF, Ron Dawson, Max ZOT, Jim ZDC and Leo ZAOB. As it was "Picnic" Clarke's ZDZ birthday, a suitable present of a doll was made by the Sultan. Later in the evening Johnny ZDZ and his wife, Debbie, were called upon with the best wishes of the Hunter Branch, and upon grasping some the bottom box open released a live rooster. So Johnny can now say that he has been given the "bird" in no uncertain manner. After more games and dancing, the Social came to a successful conclusion. Thanks are due to Mrs. Clarke and all ladies

who assisted in the making of the dresses for the Ballet and to all persons who assisted in making this Social a great success.

The aim of the Social was to bring members of the Hunter Branch and their XYLs together and to have a good time. All the hard work and team work of the Hunter Branch. This Social certainly went far in achieving this aim.

There is no doubt that Mrs. ZYC must be interested in the W.L.A. in the following week. We find the President, 250 miles from home attending the South-Western Get-Together at Cooloolan. The boys gave Jim a good hour's "ear-bashing" on the Saturday night, just so they would have "some fun". What does it go to the W.L.A. to put some really good queries on the Sunday afternoon. Mostly they wanted to know how he gets away so often. They don't seem to believe he just says "must go to the States". Some say "W.L.A. and the rest is easy—sometimes". The whole week-end was a credit to all members of the South-West Zone as almost without exception those who did not attend sent an apology. In answer to the question, "What was the best news received?" The Dubbo gang wanted ZYC to come up to Dubbo the following week-end, but even ZYC wasn't game to try that one, so soon on the YF.

SOUTHERN WESTERN ZONE

There was great activity in Cooloolan on the 4th and 5th July when a Zone gathering was held with a view to holding a Convention in

the South Western Zone later in the year. There was a really good attendance of Hams and Associate members, including Stewart IFL, Griffithton 2HS, Jim LEON, Alf COOKE, George 2BQ, Jim ZPN, Thomas 2AI, 2BW, Stan 2AID, Wagga, Jim 2AJO and Lyn 2AQE, Cooloolan, and last but not least, our worthy President and Federal Councillor, Jim Corbin, ZYC. Also present were Mr. 2AEZ and Mr. 2AMV and a very active gang of Associates, Ron Braby, Brian Jones, Bruce Fleck, Ted Druffitt, George Herriman (all of Griffith) and Bill Jenner, of Wagga.

Apologies were received from ZJK, 3HP, JAW, 2TV, 3OD, 2ANQ, 2MF, 20V, 2APP, 2GJ, 2RU, 2WV and 2AMV together with the R.I. Mr. Butler and Mr. Jack McPhee, all of whom intimated their intention to attend when the meeting was first taking shape.

After much discussion among the assembled group, it was unanimously agreed by all that a Zone Convention of two days duration be held at Wagga later in the year. An organising committee consisting of 2BW, 2AID, ZPN, IFL, 2RS and 2AJO, with power to add to its membership, will change the details and decide on the exact date.

At the conclusion of the meeting Ross 2PN tendered on behalf of the assembled gathering a vote of thanks to the President, Jim ZYC, for making the long trip to Cooloolan and for his interest and help in answering the questions asked by the assembled meeting.

Congratulations to Lyn 2AQE now active on 80, 40 and 30 m. Lyn 2AQE and IPN are very

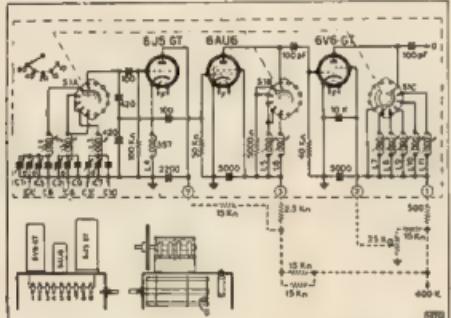
active on 144. ZRS also has a very nice set-up on 144 with 229 p.a. Don's rig was examined and much admired by the Cooloolan gathering. The Association will be looking forward into the c.w. and theory now, so that they can get on the air. Build rigs like Don's and QSO all the Hams they met at Cooloolan.

COALFIELD AND LAKES ZONE

News of the month! 2PZ has made it at last. Chris has fired up on 80 mhz and has been renewing acquaintances. The rig is a revamped AT5, the antenna system being original, but supposed to be getting out of date. It would appear that TYL's gear still works as Harry has been heard tickling the old bug again. 2ADY is still trying to find a band where there are any signals and where (please don't mention 144). The experts still claim we have not reached the bottom. With the winter lull in v.h.f. activity, 2ANU has not been heard as much as usual, but bobbed up for the occasional QSO on 144.

2VU keeps close to the fire these nights but claims to be doing some re-building while keeping warm. 2RU had the misfortune to have his beam come adrift from its driving mechanism and it is still hanging there. No harm has it that Major is busy on a "secret weapon" so results will be awaited. 2AEZ is a constant occupant of the 80 mhz band, but was reported to be in conference with 2ANQ over gear for 3 mhz. The glow of the summer evenings which appeared recently was due, I am told, to drivers working in 2KA's shack. Trust you have things straightened out again, Ces.

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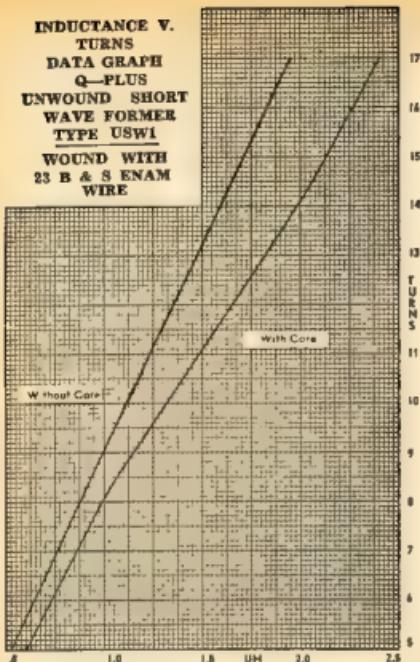
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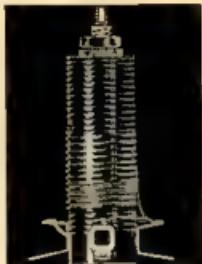


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Eddie 4WH heard QSO on 14 Mc. on a dead band recently having a mighty QSO with one of his old DX'ers. Eddie tells us that he has a GPO antenna of his own doing good job, but that the sign from DX doesn't seem to come the way you'd expect 'em to these days! Edgar 4GF made one of his infrequent appearances recently and was working a 3-way with Eddie 4WH and Eddie 4WH, why not make habit of it Ed? Well that's the lot for this month, your scribe has been spending his time on 7 and 14 Mc. c.w. and 21 and 28 Mc. phone, with fair success, but very QRL at new QTH in town.—Eric 4EL.

SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division will be held usual at the Clubrooms to a very representative gathering of the local boys and several visitors, in fact that gathering of so many members, considering that it was raining hard outside, surprised everybody. The guest speaker was Dr. Jellenik, Reader in Chemistry at the University of Adelaide. His subject was "Ultra-Sonics and Super-Sonic". In fairness to Dr. Jellenik I must say that when he first started to talk I became very worried, I guess at the set of jaws down in the body of the room and from the looks on most of the faces, I knew we were in for a really technical, technical night. With great presence of mind I formed my features into an intelligent act look, and began to compose a vote of thanks, but before I could get it off the ground hypocritical. Just how wrong the audience and I really were can never be explained, the further the lecturer went, the more interesting the talk became, until towards the end of the talk he had the audience in the palm of his hand. Without a doubt it was one of the most interesting talks that we have ever had, and I think that Dr. Jellenik was more than surprised at the number and the sensible nature of the questions that were asked during the discussion. This type of lecture, the subject of which only remotely touches on radio, once again proves that it is all to the good now and again to forget that we are primarily a radio organisation and also it proves that the lecturer knows his subject, as the Doctor certainly did, then any subject can be made of more than passing interest. The vote of thanks was duly proposed by John SKX and the enthusiastic response by the audience definitely indicated how much they had enjoyed the talk.

Very little business was taken up at the meeting, and after the President Councillor had briefly explained the new Council policy to those present, the meeting closed at the record time of 8.30 p.m. Don't let this fool you, however, very few went home, and to put it plainly, the meeting was officially concluded at 9.30 p.m. In fact, it was because a meeting is closed it does not mean that it is over, no Sir, everybody goes from group to group and joins in the general rag-chew and a grand old time had by all. The President always budey to go around purchasing a pleasant greeting and usually finishes up with the promise of various bits and pieces to the eternal envy of one Doc SMD.

Rumour has it that Ralph STW recently received a letter from a certain consultation service, him and his wife and 4AF were the re-jetting thereof until it was discovered that it was a typist's error and should have read 4A/18/2. Need I carry on with the harumphing? The only one who seems to find it all funny is Ross 5LW, but I am sure Ralph's troubles have always been a source of amusement to Ross and vice-versa, or vive-versa, or nolle-praece, or something.

I noticed that our public nuisance number one in VK5 has once again descended to personalitis and is making life difficult. He apparently recruited the scribe for VK5 "Only half-joking him, indeed." If it was not for the fact that this new straight-jacket restricts the free movement of my arms I would tell him a thousand times off. He is also immensely pleased to read their instructions and can only say, "I told you so, I told you so." Oh if only I could get out of this cell!

I hear by the grapevine that the "Dear Editor," Tom 3HX, is at the moment of writing in hospital with a bad cold. He will soon be out to wield with his usual vigour, the red pencil. That's the sort of joker I am, turn the other cheek no matter what it costs. Seriously though, Tom, keep hoping that you are soon shot again. No kidding!

UPPER MURRAY AREAS

The usual monthly meeting of the Upper Murray boys was held at the QTH of Murray SCP and those present included SRE, SKW, SMA, STL, SXO and of course SCP. Associate member, Wolfgang Wutke, was also much in

evidence, minus his plaster cast which had been around his right arm for some time since his accident a week or two months ago. An apology was received from Alec 4KO who regretted his inability to attend the meeting although he was with them in spirit. I presume that matters of a technical nature were discussed but my correspondent was so overcome with emotion at the fact that Alec 4KO brought along to the meeting some radio gear to give away, that he forgot any further mention of the proceedings of the meeting.

It appears that Alec had discovered in his travels some radio gear which was lying around and he decided to bring it along to the meeting for the benefit of the meeting. The names of all present were immediately put in a hat and Hobby SRE was the lucky recipient of a FES II and the remaining six r.c.'s, two hundred value each, were given away. There were also three Customline Fords went in to the remaining lucky names in the hat. I might have exaggerated a little but I was that annoyed to see that my name never went into the hat that I just spilt my coffee over my imagination.

My correspondent, may I have your kick the bucket, had the audacity to ask me if I wished that I had been present to acquire some of these spare bits. I treat the question with ignore, in fact I do not even answer, mainly because I am finding a couple of apostrophe fits in push-pull parallel with consequent lowering of the internal specific gravity. After all, what could I do with a secondhand piece of radio gear? Don't answer that, the radio gear gives me a terrible pain; Mine SCP did the honours at the close of the meeting as only XYLs can do, and the meeting all left for home much more heavily laden than when they came and all vowing that Alec was off his rockers. It is well known for the fact that the Dear Editor is at the moment searching for the famed red pencil. I would put on paper my opinion of the type of person who leaves my name out of a hat, but if there is any sense in thought, transference then the Upper Murray gang are all squeezed inside their rightful place of abode!

SRE is a man of many parts, as I think I have said many times before, and as President of the Remmara Gliding Club, Hobby will take the lead in that as well as elsewhere. The club has taken delivery of the gliders and is to be an official christening party and whilst nothing definite is announced as to air to ground experiments at this juncture, I would hazard a guess that Hobby couldn't resist the opportunity.

PTL is becoming a real publicity bound these days and was mentioned in the local news as being in league with a local medic in an attempt to organise a blood transfusion group. Tom is well experienced in transfusions as he had to be for his work in "Operation Australia" a couple of transfusions after each Council meeting before it would even put-pot-pot.

NORTHERN AREA

The boys from the North held another meeting this month and a very pleasant evening was had by all. The boys raised funds to get together up there because of the varied occupations of the gang and somehow or other they never seem to be able to hold their meetings on the same night as the city boys do, although the boys originally intended when the idea of holding a monthly meeting was first mooted. One of the suggestions to arise from this month's meeting was that consideration be given by Council to the recording of the technical lectures given at the Divisional meetings and then forward the recording to the Northern area where the boys could play back the lecture at their next meeting. This is not a new suggestion, the boys have been trying now and then to do so for the Council has never been able to come to any satisfactory solution, but strangely enough Hal 5AW has been giving the matter more than usual consideration and I think that he is nearer to a solution than we have ever been before. Another matter will be discussed at length at the next Council meeting and I can assure everybody that if there is a way to record the lectures on tape for the benefit of the country boys, then Council will do all in its power to help the gang. As I have said repeatedly in these notes, don't hesitate to bring up any matter, and if we can help, we sure will.

STJ is sporting a new utility and Jim is making a real go of finding a feedline. Type 3 is now coming into its own from a portent viewpoint. He has been active on 40 and 20 mx and contacted HPIFL on 40 a couple of times although he has been busy since the rather slow feedline 40/20/16 is getting 20 mx with difficulty. John has erected a twin element beam on top of the roof ready for a trouty. SXL has been trying to stage a comeback by getting some 6 mx gear to "perk" on the air. Lance has also made a new feedline to the

beam and is putting a push-pull final on his antenna and hopes to move a good mobile rig installed in his car using an xtal controlled converter for 40 and 80 mx.

SOUTH EAST AREAS

I am in a bit of a quandary this month reading reports from the S.E. boys because the v.h.f. competition for VK5 has been rather threatening in his manner towards me and has openly stated that if I continue to make mention of any v.h.f. doings in my notes, then he will take the necessary steps to see that I am rubbed out or something is rubbed out, or something is rubbed out. I am not quite sure just what he said to me, as I was hurrying away at the time, but I will try and avoid any direct mention of v.h.f. doings.

SCH is gradually getting the new home into shape and Claude has agreed to find time to spare for a little activity on a certain band that must remain nameless with me. STW is at last getting results from his gear that works on a band that must remain nameless. Tom admits that it is only a matter of sticking it in the air the gremlins to throw in the towel. Tom is more than pleased with the results from his new 20 mx beam and Stuart will be well to the fore should any DX station even as much as switch bands. Well, the new beam has been fairly quiet, but if Dame Rumour can be believed then John will soon be heard on a band that . . .

SXK is still snarling an odd now contrary now and again, getting a bit of a glimmer, are you completely re-built, which is only another way of saying that should there be any prolonged fine weather, then Eng will be up in the air. He is apparently the only R.E. station that is not yet active on 20 mx. Well, now while I offer up a prayer of thanks, SJA has completely vanished into thin air and could be up to neck in ditches working all the DX, or John could be even active on a band. SJA has been active on 40 mx and Col also has been active on a band that must remain nameless with me. Well now I ask you, Have I played the game or have I played the game. Could anybody get even an iota from the above? Well, I am sure that the S.E. are more interested in 3 mx than in any other band. I haven't even mentioned 2 mx, Gordon.

I can't finish these notes for this month without asking you a really technical question. Look out here it comes! What has two wings

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and eighteen yellow noses? The answer? Simple. A Chinese football team! What's that? You heard it differently. Maybe, but they didn't call me Fancys the virtuous in VK5 for nothing!

WESTERN AUSTRALIA

Winter conditions seem to react differently to members. Some move to warmer climates and give Ham Radio a break. There are those who, however, remain and extend their amateur lax for DX accompanied by cold feet and hands. The active member adapts himself to the new conditions, installs a radiator and finds more suitable frequency bands for State working—particularly the 80 m. in the absence of elusive DX.

To a close observer, the seasons definitely have their influence on the habits of the Amateur. Conditions at the moment seem to favor the winter set-ups. 80 m. is good for all intrastate, and at night for a couple of thousand miles. Better antenna systems and directive beams would, no doubt, convert the 80 m band into a DX one. 40 m. is the doo-dah of the Amateur, and the 16 m. the fail, is not worth the effort of weeks' hours and a move is made to 30 m. Here one finds conditions good and bad; good for a couple of hours out of the 24, and then a wimp off for the other 22. Len T.S. has been here long enough when it is clear that no signals are heard, one is left wondering if conditions account for it, or that everyone else believes there are no signals, and quickly moves to 6 m. All here is not static, however, and from time to time we have come to the conclusion that the same is not worth the candle (or midnight oil), and give it away for a while. There are at present quite a lot of Amateurs who are in this position.

The forthcoming R.D. Contest is an event that should not catch members napping, as it will be an interesting moment. Every effort should be made to support the Division in a united effort to make the results the best yet.

As a curtain raiser for the R.D. Contest, this Division stages what is termed a 40 mx scramble. An hour before lunch, each and every member is invited to take part in this truly amateurish as a "scramble". It is confined to VK6 only, and an exchange of R.S.T. together with the call signs and time, occupies only a matter of seconds. The competition is open to the Radio Society as a listening competition. It seems evident that a comprehensive emergency network will be established in W.A., starting with 144 Mc. for the city and suburban area at least.

TASMANIA

The July meeting was held at the Club Rooms on the first day of the month and in spite of the terrible weather there was a very good turn out. Business for the evening included the election of Mr. G. Johnson and Mr. S. Patterson to Associate and Full Membership respectively, and a warm welcome is extended to both. Other business for the evening was discussed at a very short time and a general ragchew followed until the lecturer arrived at about 9.15 p.m. During this time, Joe T.E.J. did a brisk business with the library which was open for the first time, and promises to develop into a fine set-up, a worthy product of the usual T.I.B. thoroughness.

And now for the chance of a lifetime to blow on my own trumpet. Lecture for the evening on "Vacuum Tube Voltmeter" turned out to be a magnificent presentation of the subject given by Geoff Crompton, M.A., last Saturday, T.L.E. In spite of his having to climb the spiked iron gates at the street entrance to gain admission to the meeting, the lecturer never faltered and indeed the interest of the D.H.A. had such applause and shouts of appreciation been heard! My apologies gentlemen, but such an opportunity—well! (Thought I was reading the VK5 notes—Editor.) Hey, wait a minute, why was that street gate locked?

But down to earth again. Bob T.O. has been lying low lately due to the rig and the voyage to the East Coast. I understand the modulation is being overhauled too, it seems Bob heard a tape recording of his phone transmission the other day and now wants to know if somebody didn't hear him. Well the R.D. Contest is on us again and the rules appear in the July issue. What about it boys—start dusting and stoking and help us to win back the trophy by putting in a log with at least the minimum number of contacts, and maybe a few more besides. I am here to help the Contest generally. Printed log sheets are available from the Secretary, T.F.J.

Nick TRY is gradually re-building the rig—going up to 10 watts too, I believe. Careful Nick, remember power is rationed, but I

reckon your average of one hour every six weeks won't lower the level of the lake much. Associate Johnny Grace observed fiddling with a disposal v.h.f. rig recently, anticipating the Technician Licence, Johnny?

The Division has been invited to provide an exhibition—a proposed exhibition to be held at Hobart from 10th January to 11th January, 1954. The name of the exhibition is to be "Science Serving Man" and we propose to operate TWI for the public. This will mean a lot of hard work and organization and volunteers will be needed soon to start the wheels turning.

Len T.S. at Queenstown has been having difficulty in getting airtime, it seems the rig was all set to go when it was discovered that the only available rock was in the e.w. portion and no key jack was in the n.s. portion and consequently there were to be no antenna. A mobile rig to menace Hobart traffic soon when Athol T.S. makes up his mind whether to make it 40 mx or 2 m. Shame on you Athol, who ever heard of a v.h.f. officer on 40 mx. Bill T.S. has been doing some thinking about the shack being full of concrete blocks for the new house. The rumour re T.S.K. is just a rumour—he is still with us. Meeting nights are the first Wednesday in each month Max.

NORTHERN ZONE

The whereabouts of one of our active members in the v.h.f. field, T.P.F. is now known; he is now busy at the Fondoo Airport, Devonport, keeping the airways communication and aids running smoothly. He is also working out on Flinders Island in the Bass Strait has purchased some v.h.f. equipment and will soon be on 144 Mc. and will be looking for contacts from the N.W. Coast and V.E.L. Leon J.P.J. now at Quoin Hill, is still on the air and on the verge of doing something like 144 Mc., but has not had his main rig yet since moving from Hobart.

Gordon T.S. has just about completed his rebuilding programme, his tx and Gelsao v.f.o. are very f.b. Ray T.R.B. our DX stayer, has braved the winter winds and still trying various antenna systems. When he is booted up he will have to watch the DX news for results. Len T.B.Q. showed under "the end of the financial year" business, has managed to rebuild his main tx. Ray T.R.B. has been heard testing. The T.D.V. has been put into operation putting together the new 8 kw. b.c. tx for V.E.L.

Ken T.L.X. not so active these days as he is busy studying for exams. Associate Geoff Crompton showed us the ins and outs of the railway communications system. We welcome this month Ken Bandfield as an Associate. Harry Salmon now has trolley buses to add to his worries.

NORTH WESTERN ZONE

Our regular meeting was held on 3rd July with a fair attendance. Plans for the forthcoming R.D. Contest were discussed and also plans for the annual meeting of this zone.

T.A.I. is about to start radiating energy from a 20 m. tx which he has been working on. What should be the DX score? P.S.W. in the process of building a new rig with many racks and panels; suppose he will be the next to build a rotary beam. T.K.B. has been having many rx troubles, but we might be able to straighten them out with the help of R.W. A recent visit to T.A.I. was enjoyed by yours truly and proved very enlightening on the subjects of pentadapters and various enclosures. I also noticed that he had gained switches on the panel to gain a few watts more which should be practised more often by Radio Amateurs.

Have been receiving TWI regularly on 40 mx, although one Sunday received it on 40 mx for the first time in months which shows that 40 mx is coming good again.

CORRESPONDENCE

The opinions expressed in these letters are the individual opinions of the writer, and do not necessarily coincide with those of the publishers.

TECHNICIAN LICENCE

12 Innes St., Launceston, Tas.
Editor A.R." Dear Sir,

I, for one would like to voice my protest against the slanders of VICKERSON in his letter published in July issue of "A.R." in which he quotes "one who cannot master the Morse Code is sadly lacking in both ability and the will to learn. Also for the derogative remark that one can only afford to have a radio sit for the A.C.C.P. examination. This latter statement, in my opinion, is a slur on the Amateurs of the past and the present, and also throws a reflection on the Associate Members of the W.I.A., particularly the younger generation, who

are trying to become fully-qualified by gaining their tickets, and should have never been voiced in the letter at all, but placed in F.E.'s capable hands, who, I think, would have made full use of it and acted promptly in the right quarters. I am sure that the W.I.A. will not let the technicians' licence question whatsoever. From my own observations, I find the Amateurs I have heard on the air and have personally come in contact with all live up to the standard of the Amateur Code published in your editorial of the July issue.

It is all very well for VICKERSON, with his A.L.R.E. and F.B.I.S. letters behind his name, to criticise that all technicians should be qualified in receiving Morse Code, but in most cases these fellows have had to put in years of very hard and arduous work to pass the test. Therefore the W.I.A. has made a very wise step in this direction in encouraging these technicians to further their studies and interest in the v.h.f. and u.h.f. bands which would be beneficial to Amateurs and trade channels as well.

Take my own case. I have been interested in radio since 1930, and the first voice and station I heard in that year was 3CM at Vaucluse, Sydney, and from that night I have followed the advances of radio for many years. Unfortunately I have not always been able to do so in my full time over these years and it is only recently since my family has grown up and I no longer have to do shift work that I have been able to do more to my past hobby. I am now 55 years old and still have a desire to attain 14 words a minute, for I find that most code stations are automatic or use the "beep" key which can be used to 20 or 40 words per minute. I am finding these are very fast for Amateurs who transmit slow enough for the beginner to receive, yet it was not for this fact that I had to pass the 14 word test. I would not have much trouble in passing the P.M.G.'s test, but I have a question on the same question, "What is the use of unending study of this subject, when you know that you cannot get through in the other?" I feel that T.A.I. has taken a step in the right direction and hopefully others will follow in his lead with the P.M.G.'s Department, to let Associate Members of the W.I.A. who have the necessary qualifications and ability to pass a suitable theory paper take part in the experiments now taking place in the W.I.A. zone.

I heartily endorse VICKERSON, VICKERSON, and VICKERSON for their remarks in their letters, but was surprised with Mr. Treloobrick's letter.

—HENRY F. SOLOMON,
Associate W.I.A. VK1.

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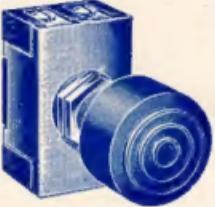
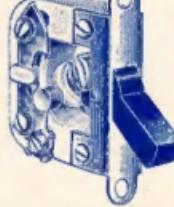
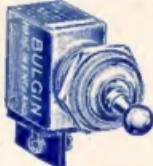
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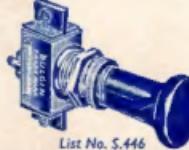
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